

Document title

TAQ NYSE ARCABOOK CLIENT SPECIFICATION

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PREFACE

DOCUMENT HISTORY

The following table provides a description of all changes to this document.

VERSION NO.	DATE	CHANGE DESCRIPTION
1.2	9/07	Changed order reference number length from 8 to 10.
1.3	8/09	Changed order reference number length from 10 to 20.
1.4	8/09	Changed the value for Sequence #, Exchange Code, System Code, and Quote ID
1.4a	10/09	Updated System Event message with new System Code and Event Code.
1.5	12/09	Clarified sequence number.
1.5a	06/10/10	Formatted into new template
1.6	07/25/12	Changed product names Rebranded document with new NYSE Technologies template
1.7	04/10/13	Corrected FTP server name
1.8	09/19/13	Corrected message formats
1.9	05/21/14	Corrected message type on message 2.5 to read “V” instead of “I”
2.0	06/02/14	Removed references to ArcaEdge to reflect change in product

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FURTHER INFORMATION

- For additional product information, visit the [Product Page](#)
- For updated capacity figures, visit our capacity pages at: <http://www.nyxdata.com/capacity>
- For a full glossary, visit: <http://www.nyxdata.com/glossary/>

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1. INTRODUCTION

NYSE ArcaBook data is available on a historical/end-of-day basis in flat file format, enabling you to recreate the limit order book for any given time. This product is called *TAQ NYSE ArcaBook* (“TAQ” refers to “Trades and Quotes”).

TAQ NYSE ArcaBook includes the details of all open orders and order changes (including replaces and cancels) entered into ArcaEx. Each file contains messages disseminated via NYSE Arca’s real-time ArcaBook data feed and includes information for OTC, exchange-listed, and ETF securities.

1.1 ACCESS AND DATA FORMAT

TAQ NYSE ArcaBook files are available in several flat files, in ASCII format. All files are compressed using GNU Zip. TAQ NYSE ArcaBook files are approximately 2.5 GB. Files are available via File Transfer Protocol (FTP).

Subscribers must execute the appropriate agreement (Exhibit A and/or NYSE Vendor Agreement). Upon the approval, NYSE will send the ftp credentials for accessing the data.

1.2 DATA TYPES

All numeric fields are composed of a string of ASCII characters (0-9), left justified and NULL padded. All alpha fields are left justified and NULL padded.

Prices are given in decimal format, left justified and NULL padded. The decimal portion of the price can go back up to 6 decimal places. Examples; “25.222”, “0.125”, “100.6”, “2.30”.

The Sequence number is a sequential number that identifies the message per symbol. This number will start the trading session at one (1) and increment by one (1) for each new message per symbol.

There are two timestamp fields: one specifying seconds and the other specifying milliseconds associated with that second. The second timestamps are in seconds since midnight (00:00:00) of the trading day.

1.3 SYMBOLOGY

The Comstock symbology is embedded in the Stock field for orders with System Code = “L”. Nasdaq symbology will be used for orders with System Code = “O”, ETF will use the System Code of “E.”

1.4 FTP DIRECTORY STRUCTURE

Table 1 FTP Details

HOST	PATH
ftp2.nyxdata.com	Accessed directly from root.

Table 2 Folder Names

FILE TYPE	TOP LEVEL	SECOND LEVEL	THIRD LEVEL
Add / Modify / Delete/Imbalance/System Event	/EQY_US_ALL_ARCA_BOOK	/EQY_US_ALL_ARCA_BOOK_YYYY	/EQY_US_ALL_ARCA_BOOK_YYYYMM

The file name comprises the folder name (for example, EQY_US_ALL_ARCA_BOOK) concatenated with the trading date (in the format YYYYMMDD). Files are in compressed comma-separated value (CSV) format, for example:

- EQY_US_ALL_ARCA_BOOK_20120525.csv.gz

1.5 ALTERNATIVE PRODUCTS

For details of related TAQ products and the full range of TAQ offerings, please refer to the Historical Data Products section of NYXData at: <http://www.nyxdata.com/Data-Products/Historical-Data>.

2. TAQ NYSE ARCABOOK MESSAGES

TAQ NYSE ArcaBook supports the following message types, corresponding to the nature of the message submitted by the NYSE Arca matching engine:

- Add Order
- Modify Order
- Delete Order
- Imbalance
- System Event

2.1 ADD ORDER MESSAGE

The Add Order message communicates the details of a new order added to NYSE Arca’s open order book. The order reference number will be a unique identifier per system code for this order.

Table 3 Add Order Message Format

NAME	SIZE (BYTES)	FORMAT	DESCRIPTION
Message Type	1	Alpha	Add new order – “A”.
Sequence Number	10	Numeric	1-9999999999.
Order Reference Number	20	Numeric	The unique reference number per symbol assigned to this new order.
Exchange Code	1	Alpha	The ID of the originating exchange of the quote: <ul style="list-style-type: none"> ■ ‘N’ – NYSE ■ ‘P’ – NYSE Arca
Buy/Sell Indicator	1	Alpha	Valid values are: <ul style="list-style-type: none"> ■ ‘B’ – Buy order ■ ‘S’ – Sell order
Shares	9	Numeric	Show size of order.
Stock Symbol	8	Alpha	The stock symbol.
Price	10	Price	The limit price of the order.
Seconds	5	Numeric	Seconds timestamp.
Milliseconds	3	Numeric	Milliseconds timestamp.
System Code	1	Alpha	The ID of the originating system of the quote: <ul style="list-style-type: none"> ■ ‘L’ – Listed ■ ‘O’ – OTC ■ ‘E’ – ETF

NAME	SIZE (BYTES)	FORMAT	DESCRIPTION
Quote ID	5	Alpha	Valid values are: <ul style="list-style-type: none"> ■ 'A'+MPID if attributed ■ 'AARCA' if non-attributed
Filler	8	n/a	

If an order is to be attributed, TAQ NYSE ArcaBook will include the appropriate MPID in the 'Quote ID' field of the Add Order message (this is derived from the first four letters of a firm's ETPID). For example, if Broker Dealer 'XXXX' designated an order to be attributed, TAQ NYSE ArcaBook will display 'AXXXX' for the order. If the order is not attributed, it will display as 'ARCAX' for ArcaEx.

2.2 MODIFY ORDER MESSAGE

The Modify Order message is sent when an order on the NYSE Arca book is modified. When an order is modified, the order reference number will reference the original order sent in the Add Order message. The following events will trigger the inclusion of a modify order message.

- The price of an order changes
- The size of an order changes
- An order is partially filled

Table 4 Modify Order Message Format

NAME	SIZE (BYTES)	FORMAT	DESCRIPTION
Message Type	1	Alpha	Modify order – "M".
Sequence Number	10	Numeric	1-9999999999.
Order Reference Number	20	Numeric	The unique reference number per symbol assigned to this new order.
Shares	9	Numeric	Show size of order.
Price	10	Price	The limit price of the order.
Seconds	5	Numeric	Seconds timestamp.
Milliseconds	3	Numeric	Milliseconds timestamp.
Stock Symbol	8	Alpha	The stock symbol.
Exchange Code	1	Alpha	The ID of the originating exchange of the quote: <ul style="list-style-type: none"> ■ 'N' – NYSE ■ 'P' – NYSE Arca
System Code	1	Alpha	The ID of the originating system of the quote:

NAME	SIZE (BYTES)	FORMAT	DESCRIPTION
			<ul style="list-style-type: none"> ■ 'L' – Listed ■ 'O' – OTC ■ 'E' – ETF
Quote ID	5	Alpha	Valid values are: <ul style="list-style-type: none"> ■ 'A'+MPID if attributed ■ 'AARCA' if non-attributed
Buy/Sell Indicator	1	Alpha	Valid values are: <ul style="list-style-type: none"> ■ 'B' – Buy order ■ 'S' – Sell order
Filler	7	n/a	

2.3 DELETE ORDER MESSAGE

The Delete Order message is sent when an order is taken off the NYSE Arca open order book. The following events will trigger the transmission of a delete order message.

- An order is cancelled
- An order expires
- An order is filled

Table 5 Delete Order Message Format

NAME	SIZE (BYTES)	FORMAT	DESCRIPTION
Message Type	1	Alpha	Delete the order – “D”.
Sequence Number	10	Numeric	1-9999999999.
Order Reference Number	20	Numeric	The unique reference number per symbol assigned to this new order.
Seconds	5	Numeric	Seconds timestamp.
Milliseconds	3	Numeric	Milliseconds timestamp.
Stock	8	Alpha	The stock symbol.
Exchange Code	1	Alpha	The ID of the originating exchange of the quote: <ul style="list-style-type: none"> ■ 'N' – NYSE ■ 'P' – NYSE Arca
System Code	1	Alpha	The ID of the originating system of the quote:

NAME	SIZE (BYTES)	FORMAT	DESCRIPTION
			<ul style="list-style-type: none"> ■ 'L' – Listed ■ 'O' – OTC ■ 'E' – ETF
Quote ID	5	Alpha	Valid values are: <ul style="list-style-type: none"> ■ 'A'+MPID if attributed ■ 'AARCA' if non-attributed
Buy/Sell Indicator	1	Alpha	Valid values are: <ul style="list-style-type: none"> ■ 'B' – Buy order ■ 'S' – Sell order
Filler	7	n/a	

2.4 IMBALANCE MESSAGE

The Imbalance message is sent in response to orders submitted during pending auctions. The message is sent between 8:00 am EST and the conclusion of the Opening Auction for orders designated for the Opening Auction, and between 8:00 am EST and the conclusion of the Market Order Auction for orders designated for the Market Order Auction.

ArcaEx will disseminate Closing Auction messages between 3:00 pm EST and the conclusion of the Closing Auction at 4:00 pm EST (times are subject to change).

TAQ NYSE ArcaBook will also include imbalance information for Halt Auctions.

For auctions, the total imbalance volume and market imbalance volume will be negative for a sell imbalance.

Table 6 Imbalance Message Format

NAME	SIZE (BYTES)	FORMAT	DESCRIPTION
Message Type	1	"I"	Imbalance message
Sequence Number	10	Numeric	The unique reference number per symbol assigned to the original order
Stock Symbol	8	Alpha	The stock symbol
Price	10	Price	The indicative match price
Shares	9	Numeric	The indicative match volume
Total Imbalance	9	Numeric	The total imbalance volume

NAME	SIZE (BYTES)	FORMAT	DESCRIPTION
Seconds	5	Numeric	Seconds timestamp
Milliseconds	3	Numeric	Milliseconds timestamp
Market Imbalance	9	Numeric	The market imbalance volume
Auction Type	1	Alpha	O-Open, M-Market, H-Halt, C-Closing
Auction Time	4	Numeric	Projected Auction Time (hhmm)
Exchange Code	1	Alpha	The id of the originating exchange of the quote. Valid values: 'N' – NYSE 'P' – NYSE Arca
System Code	1	Alpha	The id of the originating system of the quote. Valid values: 'L' – Listed 'O' – OTC 'E' – ETF
Padding	8	Alpha	Not used

The Market Order Imbalance is the imbalance of any remaining Market Orders that are not going to be executed in a Market Order Auction. Calculation of match size and indicative match price remain unchanged.

The Total Imbalance is the net imbalance of orders at the indicative match price for all orders eligible for the next upcoming Auction. This includes Market and Limit Orders. Display of match size and indicative match price remain unchanged.

2.5 SYSTEM EVENT MESSAGE

The system event message is sent by the NYSE ArcaBook server to indicate a special system event and corresponding event code.

Table 7 System Event Message Format

NAME	SIZE (BYTES)	FORMAT	DESCRIPTION
Message Type	1	"V"	System Event Message
Sequence Number	10	Numeric	The unique reference number per symbol assigned to the original order
Expected Sequence Number	10	Numeric	1-9999999999

NAME	SIZE (BYTES)	FORMAT	DESCRIPTION
Seconds	5	Numeric	Seconds timestamp
Milliseconds	3	Numeric	Milliseconds timestamp
Event Code	1	Alpha	"S" - Clear Book by Symbol
System Code	1	Alpha	The ID of the originating system of the quote: <ul style="list-style-type: none"> ■ 'L' – Listed ■ 'O' – OTC ■ 'E' – ETF
Stock Symbol	8	Alpha	The stock symbol.
Filler	7	n/a	

The system event message with Event Code = "S" indicates that all orders in the book for the corresponding Symbol should be cancelled. The message will also include the next expected sequence number. In most cases this will be the Sequence # + 1 although it is possible that the system has been reset and the sequence numbers will restart at 1.

APPENDIX A: NYSE STOCK SYMBOL SUFFIXES

Table 8 NYSE Stock Symbol Suffixes

SUFFIX	DESCRIPTION
<v>	<v> represents a character; Series (or Class) A-T & V-Z; Examples include the following: ZZZ A is the same as ZZZ/A ZZZ T is the same as ZZZ/T
<v>CL	Series (or Class) A-T & V-Z Called. Examples include the following: ZZZ ACL is the same as ZZZ/A/CL
<v>CV	Series (or Class) A-T & V-Z Convertible. Examples include the following: ZZZ ACV is the same as ZZZ/A/CV
<v>WI	Series (or Class) A-T & V-Z When Issued. Examples include the following: ZZZ AWI is the same as ZZZ/Aw
CL	Called. Examples include the following: ZZZ CL is the same as ZZZ/CL
CT	Certificates. Examples include the following: ZZZ CT is the same as ZZZ/CT
CV	Convertible. Examples include the following: ZZZ CV is the same as ZZZ/CV (ZZZ/CV)
CVR	Contingent Value Right. Examples include the following: ZZZ CVR is the same as ZZZ/CVR
CVCL	Convertible Called. Examples include the following: ZZZ CVCL is the same as ZZZ/CV/CL
DP	Amount of most-recent dividend to go “ex-distribution”. Examples include the following: ZZZ DP is the same as ZZZ/DP
DV	Accumulated dividend per share, net of expenses, through and including the previous day’s close of trading. Examples include the following: ZZZ DV is the same as ZZZ/DV
EC	Emerging Company Marketplace. Examples include the following: ZZZ EC is the same as ZZZ/EC
EU	Estimated cash amount for creation unit. Examples include the following: ZZZ EU is the same as ZZZ/EU
FN	Foreign News. Examples include the following: ZZZ FN is the same as ZZZ/F/N
ID	Index – differentiates an index from a stock with the same root symbol. Examples include the following: III ID is the same as III/ID
IV	Intra-day Net Asset Value per share. Examples include the following: ZZZ IV is the same as ZZZ/IV
NV	Net Asset Value per share, as of the close on the previous trading day. Examples include the following: ZZZ NV is the same as ZZZ/NV
PP	Partial Paid. Examples include the following: ZZZ PP is the same as ZZZ/PP

SUFFIX	DESCRIPTION
PTCL	Part Called. Examples include the following: ZZZ PTCL is the same as ZZZ/PT/CL
PR	Preferred. Examples include the following: ZZZ PR is the same as ZZZp
PR<v>	<v> represents a character; Preferred Series A-T & V-Z. Examples include the following: ZZZ PRA is the same as ZZZpA ZZZ, PRB is the same as ZZZpB
PR<v>CL	<v> represents a character; Preferred Series A-T & V-Z Called. Examples include the following: ZZZ PRACL is the same as ZZZpA/CL ZZZ, PRBCL is the same as ZZZpB/CL
PR<v>CV	<v> represents a character; Preferred Series A-T & V-Z Convertible. Examples include the following: ZZZ PRACV is the same as ZZZpA/CV ZZZ, PRBCV is the same as ZZZpB/CV
PR<v>WI	<v> represents a character; Preferred Series A-T & V-Z When Issued. Examples include the following: ZZZ PRAWI is the same as ZZZpAw ZZZ, PRBWI is the same as ZZZpBw
PRWI	Preferred When Issued. Examples include the following: ZZZ PRWI is the same as ZZZpw
PRCL	Preferred Called. Examples include the following: ZZZ PRCL is the same as ZZZp/CL
PRCV	Preferred Convertible. Examples include the following: ZZZ PRCV is the same as ZZZp/CV
PRWD	Preferred When Distributed. Examples include the following: ZZZ PRWD is the same as ZZZp/WD
PRC<v>	Indicates Class A; could also be B-K and M-S; Second Category of Preferred. Examples include the following: ZZZ PRCA is the same as ZZZpCA ZZZ, PRCB is the same as ZZZpCB
RT	Rights. Examples include: ZZZ R is the same as ZZZr
RWI	Rights When Issued. Examples include: ZZZ RWI is the same as ZZZrw
SC	Small Corporate Offering Registration. Examples include the following: ZZZ SC is the same as ZZZ/SC
SP	Special. Examples include the following: ZZZ SP is the same as ZZZ/SP
SD	Stamped. Examples include the following: ZZZ SD is the same as ZZZ/SD
SO	Current Shares Outstanding, in thousands. Examples include the following: ZZZ SO is the same as ZZZ/SO
TC	Total cash amount per creation unit, in thousands. Examples include the following: ZZZ TC is the same as ZZZ/TC
TEST	Exclusive suffix used for intraday test message. Examples include the following: ZZZ TEST is the same as ZZZ/TEST
TT	Tier II Securities. Examples include the following: ZZZ TT is the same as ZZZ/TT

SUFFIX	DESCRIPTION
U	Units (a combination of securities composed of two or more of warrants, common stocks, preferred stocks and/or bonds). Examples include the following: ZZZ U is the same as ZZZ/U
VR	Variable Common Rights. Examples include the following: ZZZ VR is the same as ZZZ/VR
WD	When Distributed. Examples include the following: ZZZ WD is the same as ZZZ/WD
WI	When Issued. Examples include the following: ZZZ WI is the same as ZZZw
WS	Warrants. Examples include the following: ZZZ WS is the same as ZZZ/WS
WWS	With Warrants. Examples include the following: ZZZ WWS is the same as ZZZ/W/WS
WS<v>	Warrants Series <v>; Series A-T & V-Z. Examples include the following: ZZZ WSA is the same as ZZZ/WSA
WSWI	Warrants When Issued

Table 9 Suffix Definitions

SUFFIX	DESCRIPTION
Called	An issue being redeemed by its issuing corporation under definite conditions before maturity.
Certificate	Refers to a negotiable certificate representing deposit of stock with a pending change in its condition.
Convertible	A preferred share which its owner may convert into common stock or another security, usually in the same company, in accordance with the terms of issue.
Preferred	A class of stock with priority over common stock in regard to earnings and/or liquidations.
Rights	Represent the privilege to subscribe (in proportion to the number of shares owned) to new or additional securities, usually at or below the current market price. Rights ordinarily have market values of their own and are traded actively. In most cases they must be exercised within a relatively short period of time.
Stamped	Indicates rights and privileges different from securities of the same issue, class, or series not stamped.
Warrant	Indicates a certificate giving its holder the right to purchase securities at a stipulated price, either within a specified time limit or in perpetuity.
When Distributed	Signifies a short form of “when, as, and if distributed” (see ‘When Issued’).
When Issued	Means a short form of “when, as, and if issued”; indicates a transaction in a security authorized for issuance, but not yet issued. All “When Issued” transactions are on an “if” basis, to be settled if and when the actual security is issued.

SUFFIX	DESCRIPTION
With Warrants	A security with a warrant attached that entitles the holder to purchase another security at stipulated price(s), either within a specified time or in perpetuity. Warrants may be immediately detachable from their underlying securities or detachable after specified periods.
Without Warrants	A security from which the warrant(s) has been removed.

APPENDIX B: NASDAQ STOCK SYMBOL SUFFIXES

Source: Nasdaq web site: <http://www.nasdaq.com/reference/glossary.stm>

Table 6 NASDAQ Stock Symbol Suffixes

SUFFIX	DESCRIPTION
A	Class A
B	Class B
C	Issuer qualification exception – the issuer has been granted a continuance in NASDAQ under an exception to the qualification standards for a limited period.
D	New
E	Delinquent in required filings with the SEC
F	Foreign
G	First convertible bond
H	Second convertible bond, same company
I	Third convertible bond, same company
J	Voting
K	Nonvoting
L	Miscellaneous situations, such as depositary receipts, stubs, additional warrants, and units
M	Fourth preferred, same company
N	Third preferred, same company
O	Second preferred, same company
P	First preferred, same company
Q	Bankruptcy - the issuer is involved in bankruptcy proceedings.
R	Rights
S	Shares of beneficial interest
T	With warrants or with rights
U	Units
V	When-issued and when-distributed
W	Warrants
Y	ADR (American Depositary Receipt)
Z	Miscellaneous situations, such as depositary receipts, stubs, additional warrants, and units